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B1T TNRU
E2A AAN A106 A160 A171 A411

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GB 2274705 A GB 2147990 A GB 1372170 A
EP 0138738 A2 US 5230327 A US 4350504 A
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UK CL (Edition O) B1T TNFB TNRU, F4V VFC VGAC,
F4W, F4X XA2BX XA2D
INT CL⁶ A47J 36/38, B01D 46/00 46/10, B08B 15/02,
F24C 15/20, F24F 13/28

(54) Filter hood

(57) A filter hood includes a casing (1) having a top exhaust port and two downward wind box mounting flanges; a wind box (2) mounted inside the casing and detachably fastened to the wind box mounting flanges by hook joints (21, 26), the wind box housing two detachable fans, with two grease filters (3) respectively mounted on a respective suction port on the wind box to filter grease from air passing there-through; and a bottom cover (4) having a back side hinged at (5) to the back side of casing and a front side fastened to the front side of the casing by locks (41). When moved to its open position, the bottom cover allows access for maintenance to the filters (3).

The hook joints include two oppositely-mounted curved pull bars (25). Each lock (41) includes a push rod and a latch bolt (415) able to be located in a retaining hole (11) in the casing (1).

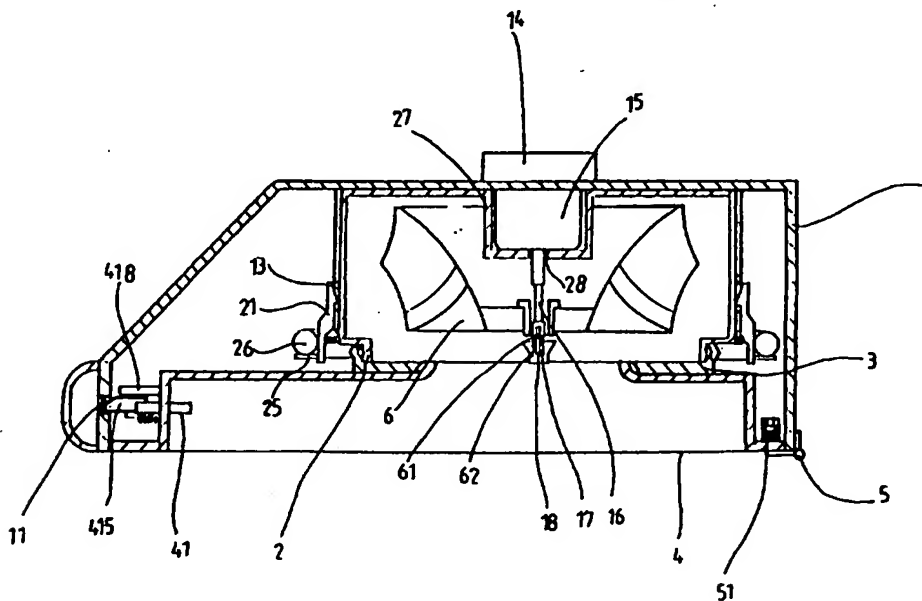


FIG.2

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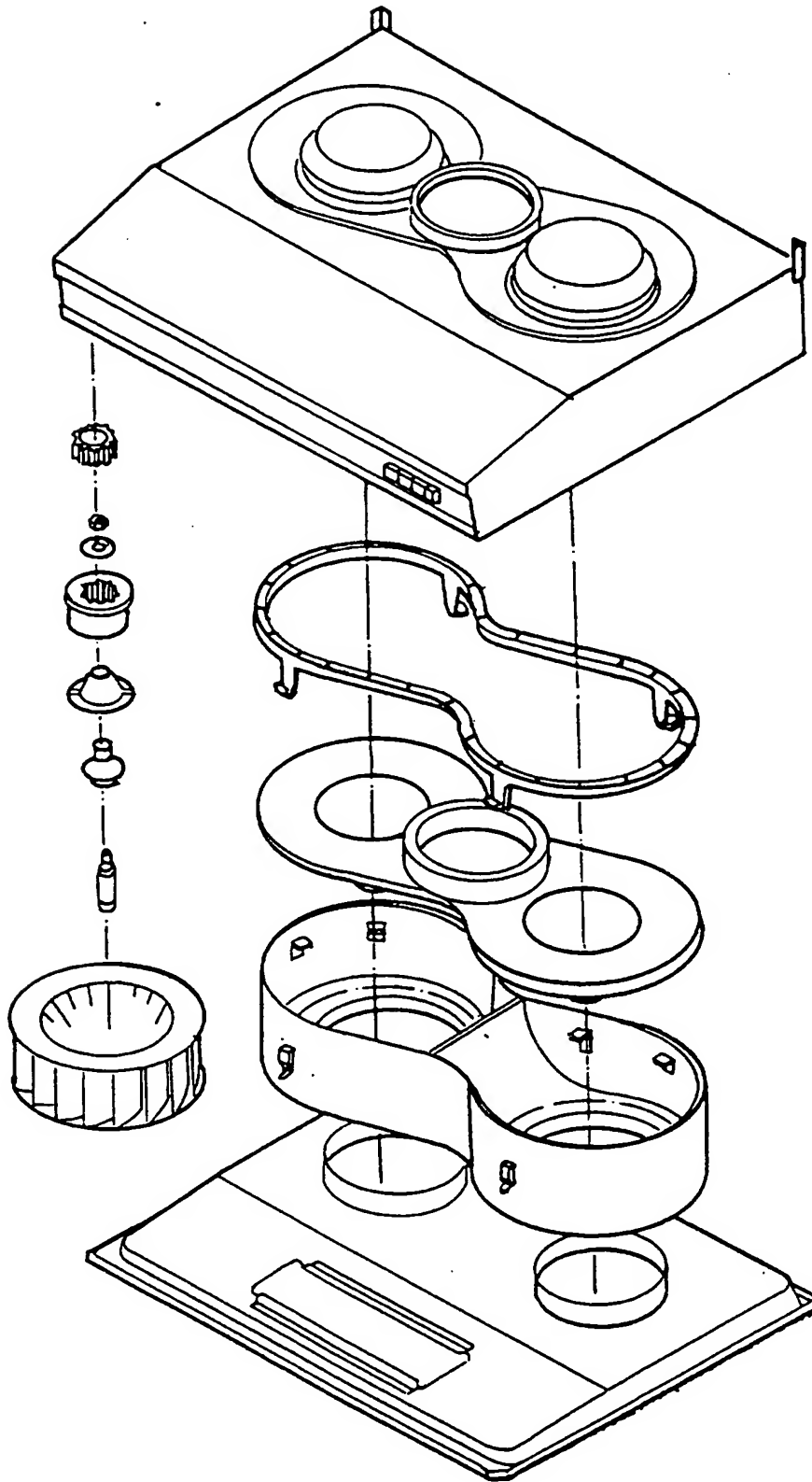


FIG.1

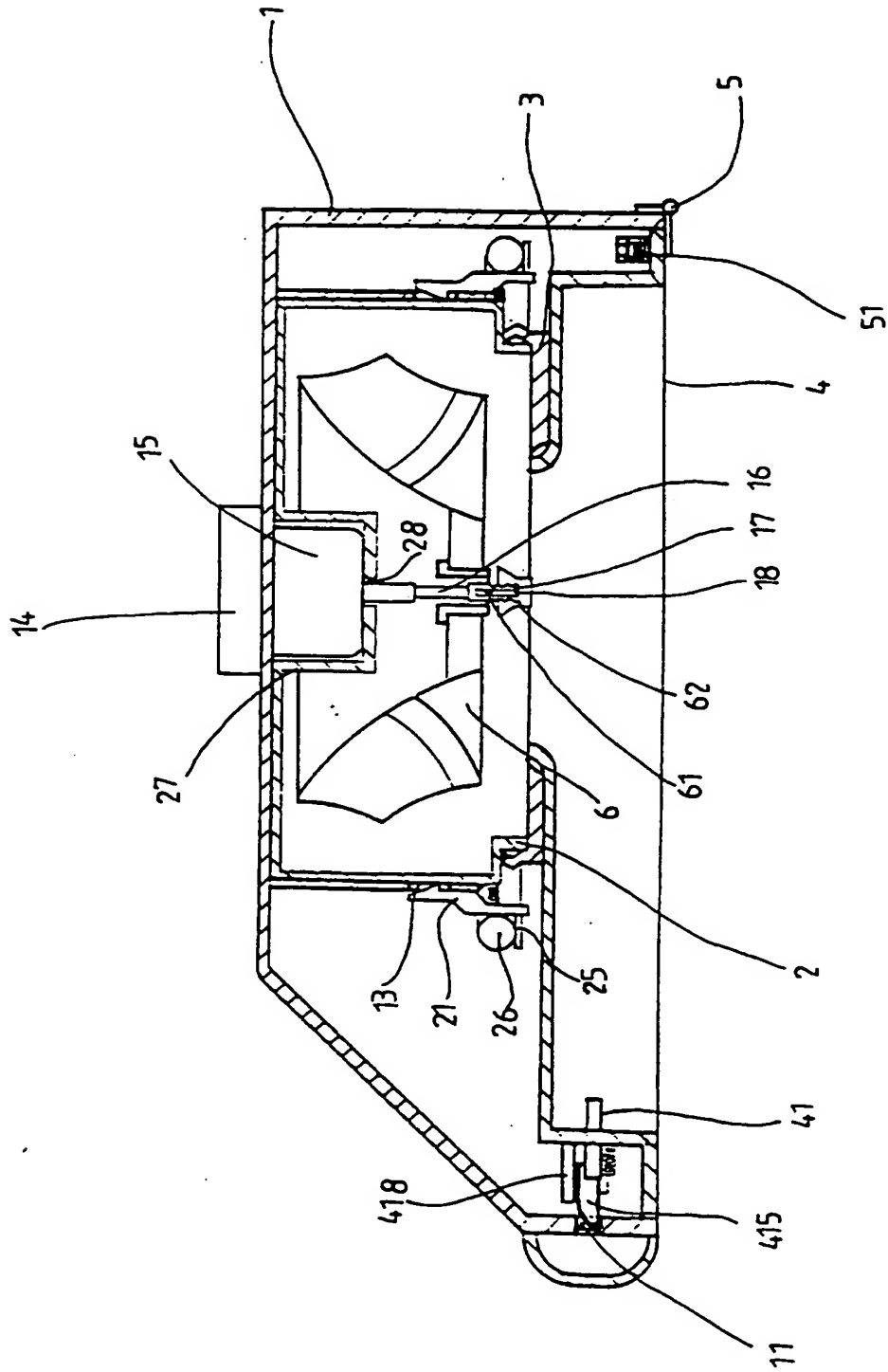


FIG. 2

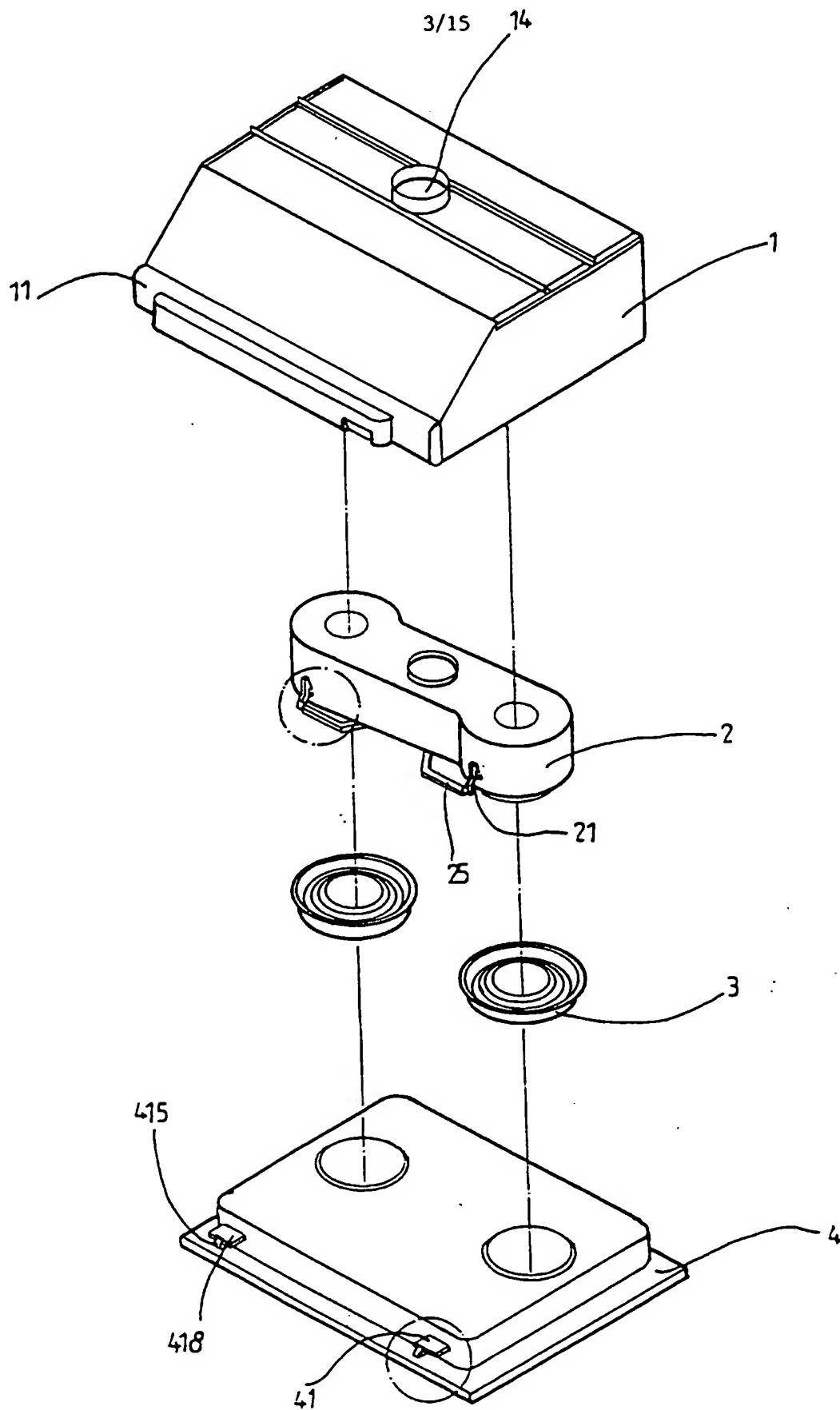


FIG. 3A

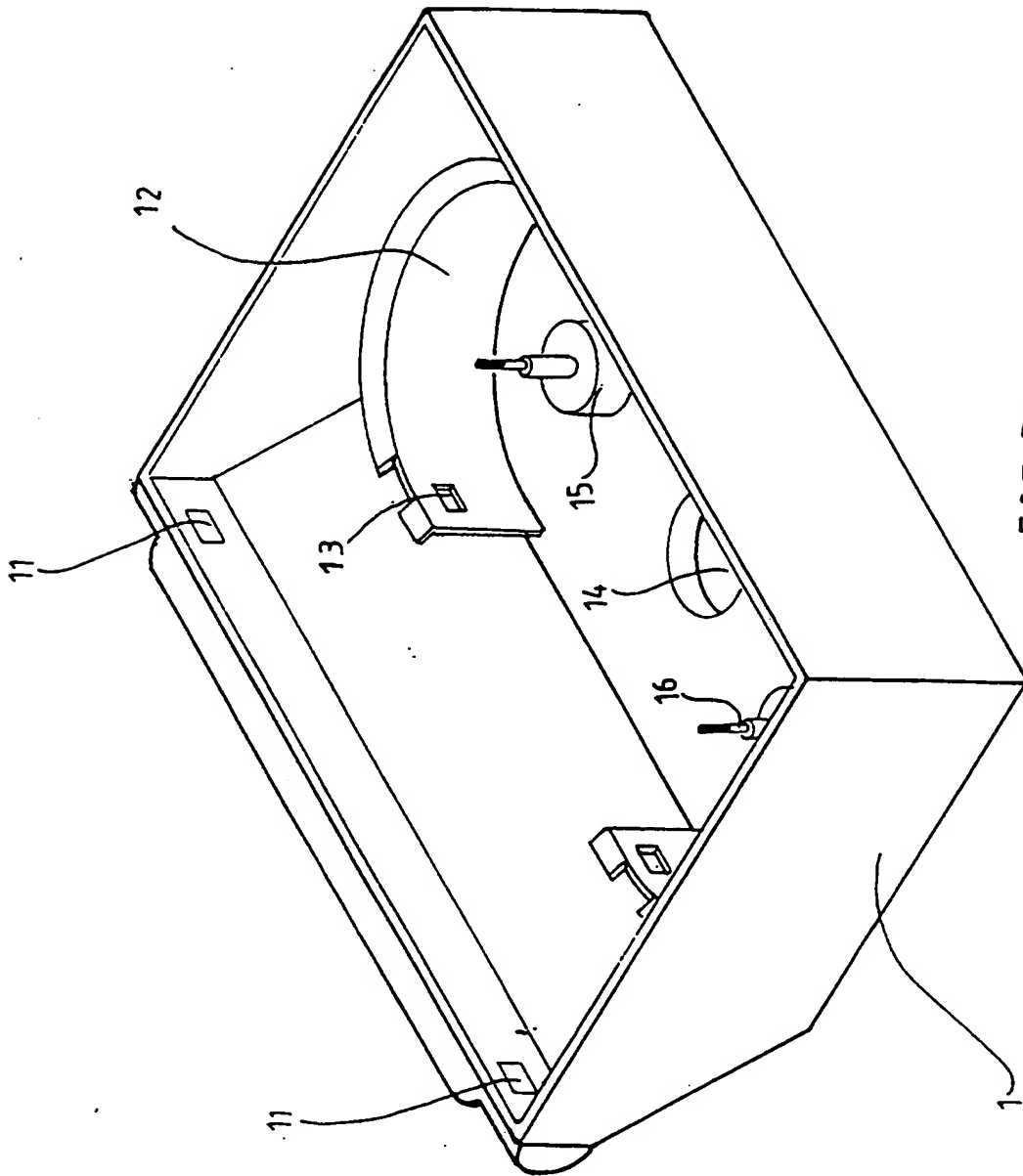


FIG. 3B

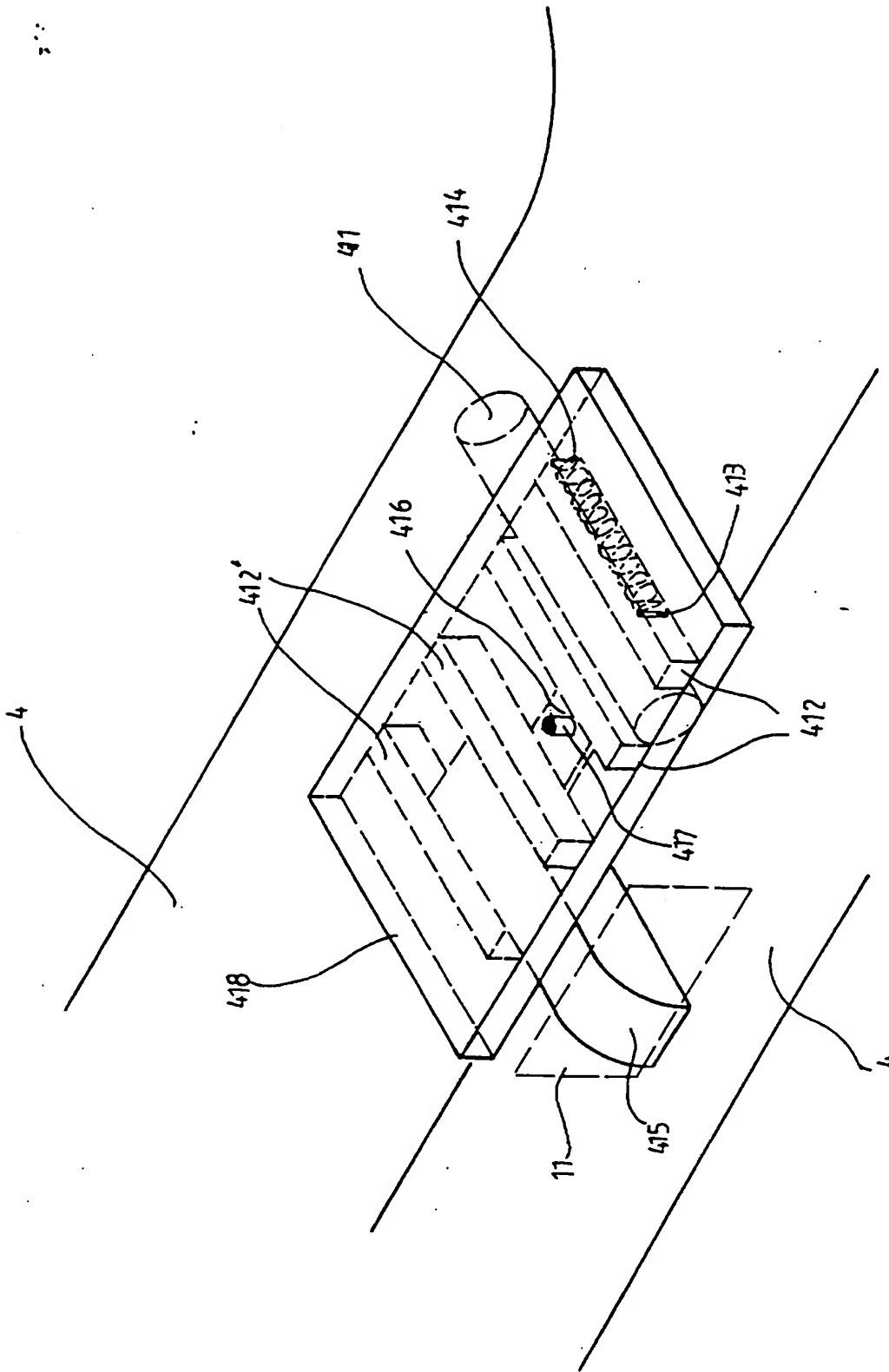


FIG. 4

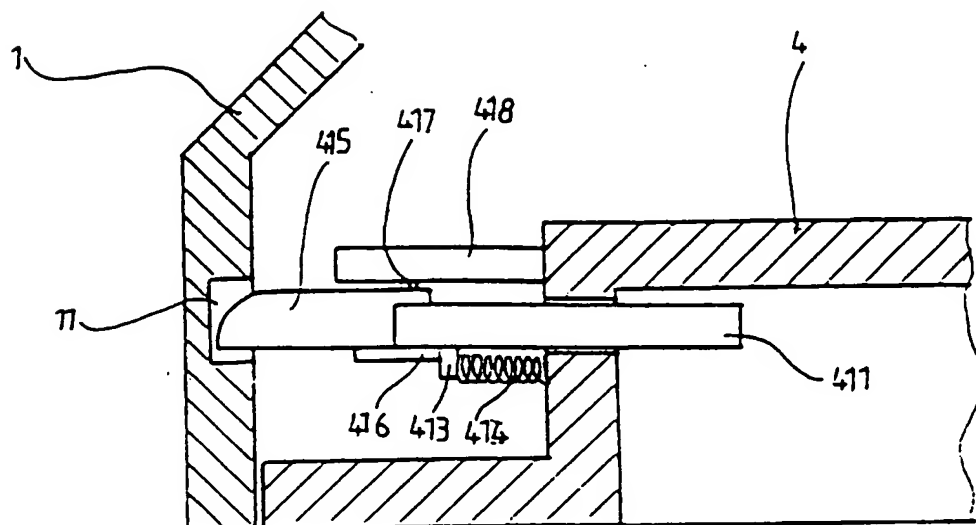


FIG. 5A

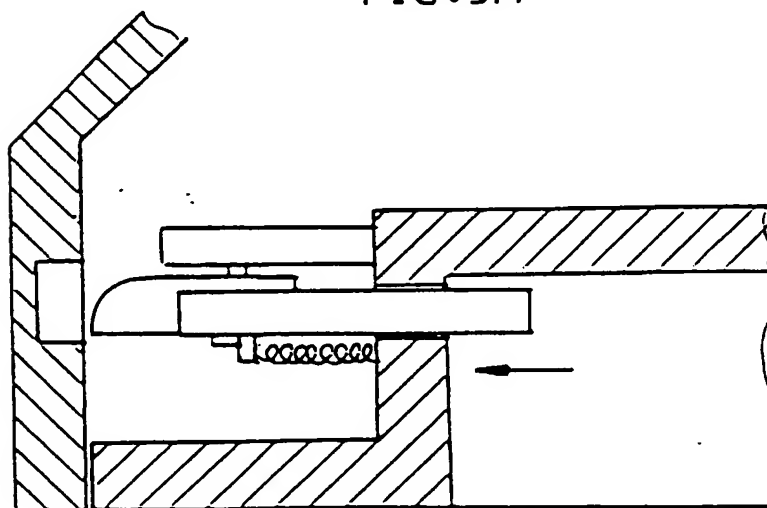
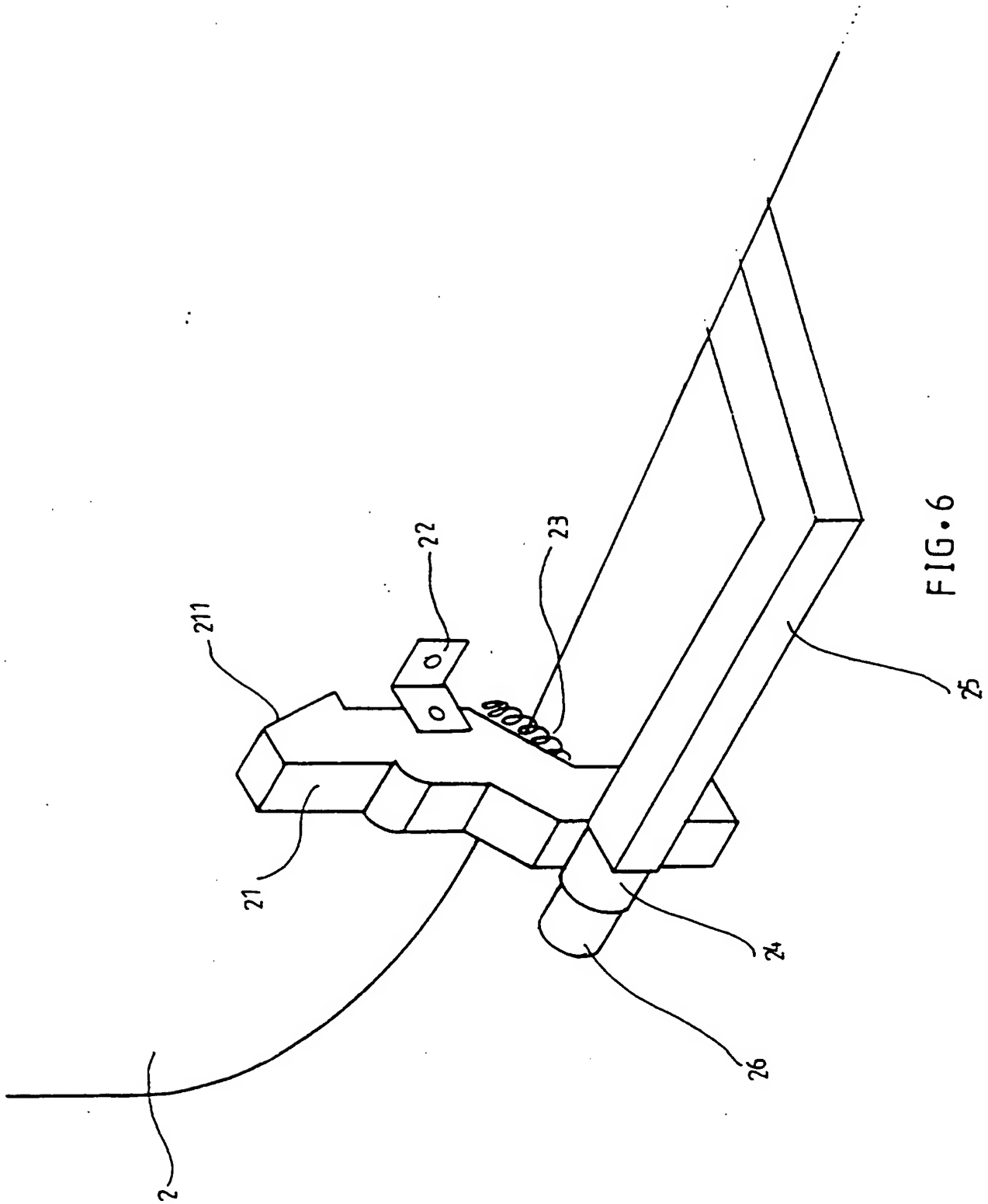


FIG. 5B



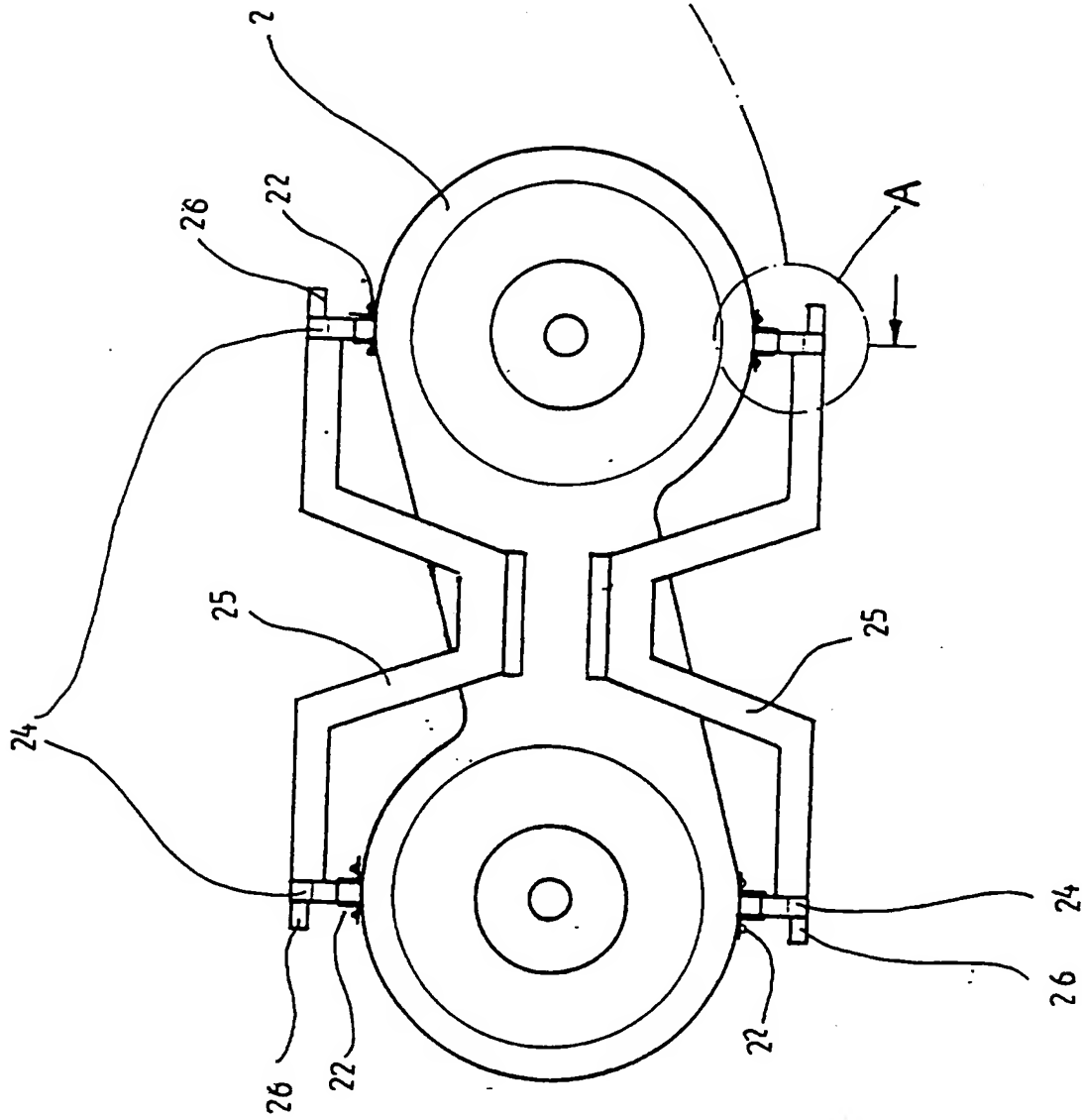


FIG. 7

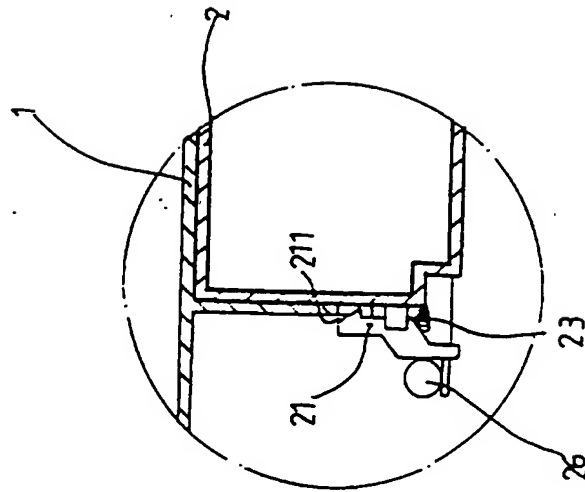


FIG. 7A

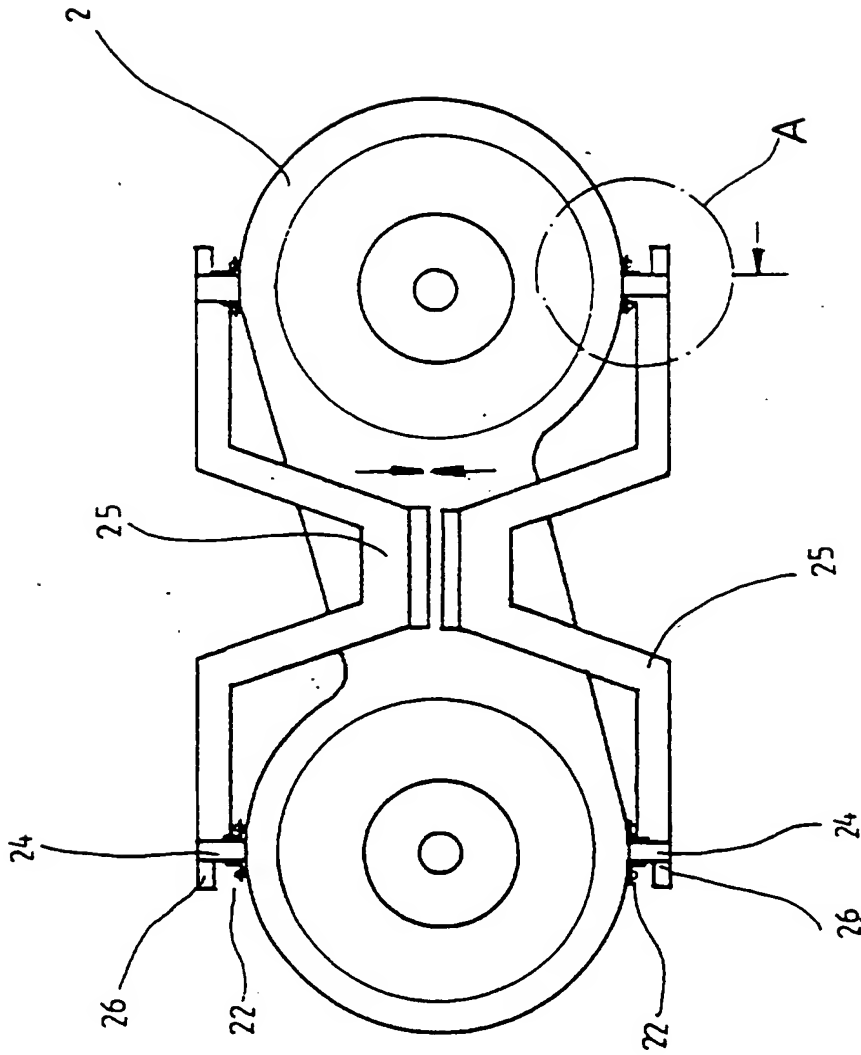


FIG. 8

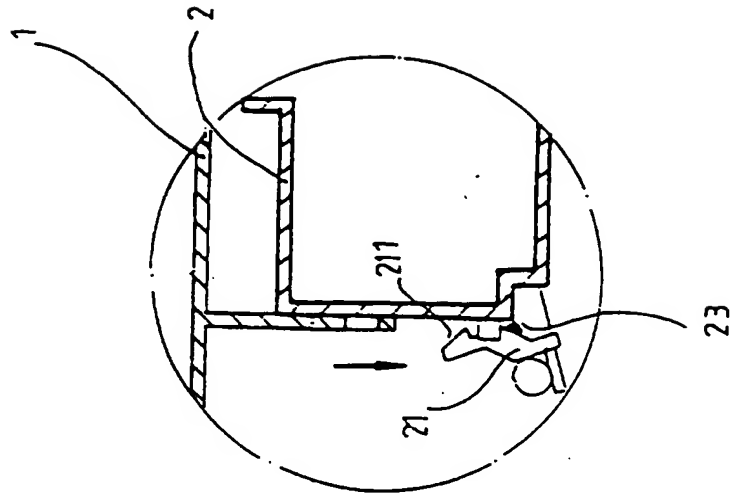


FIG. 8A

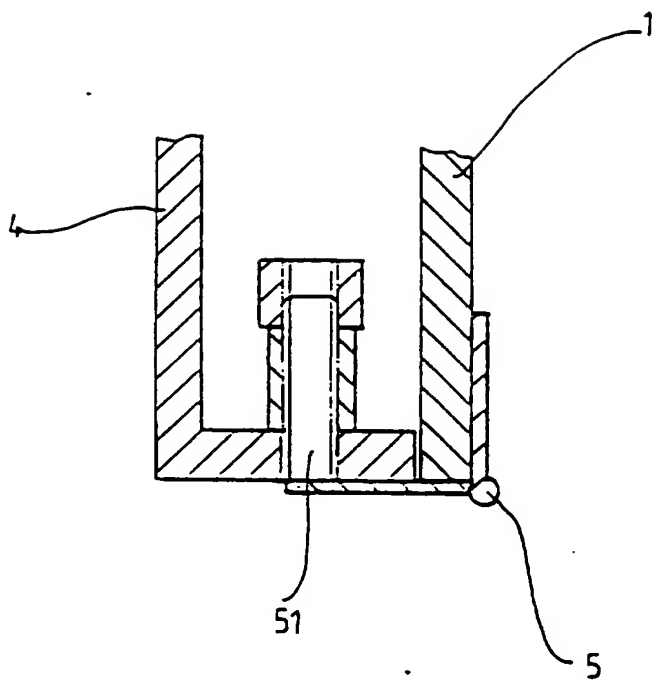


FIG.9

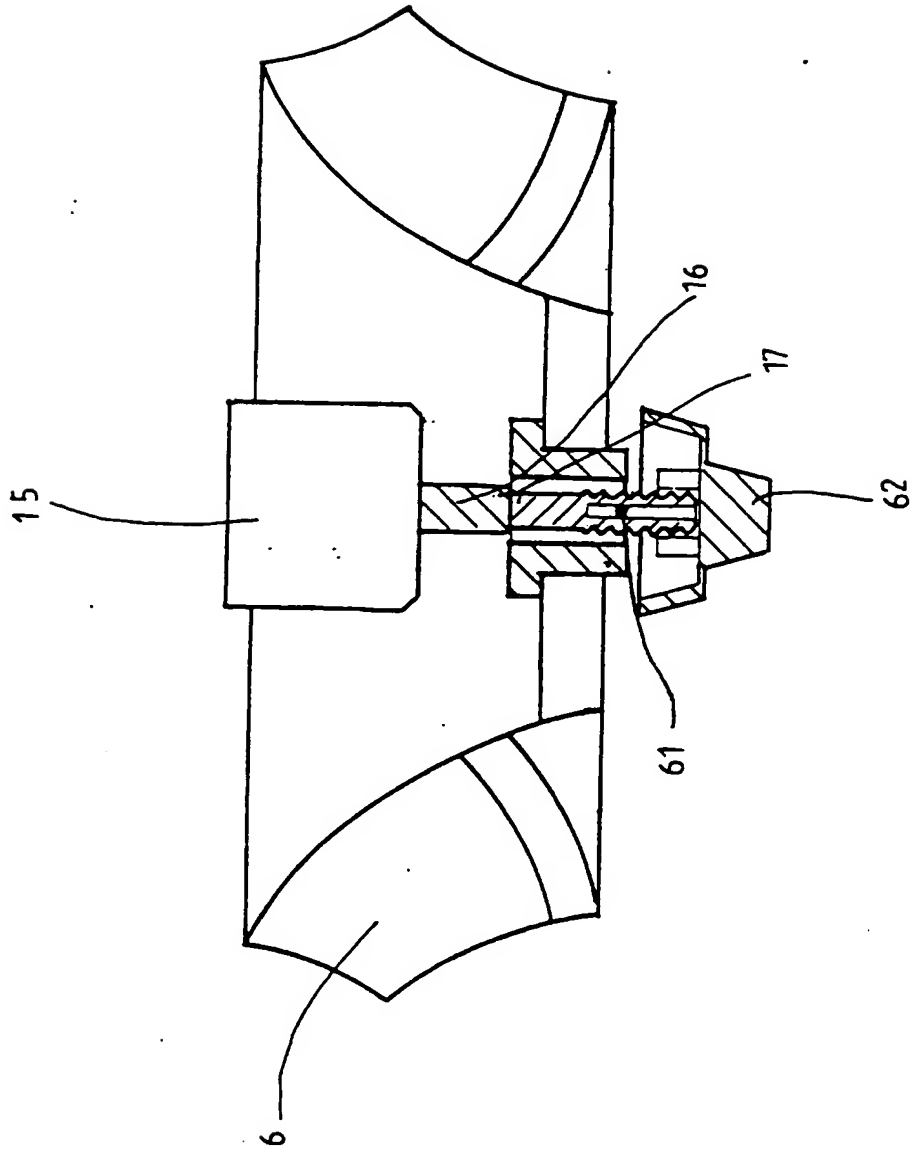


FIG. 10

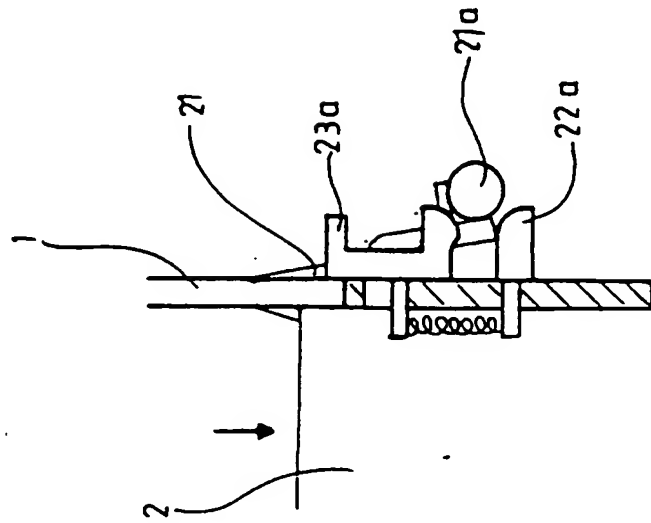


FIG. 11C

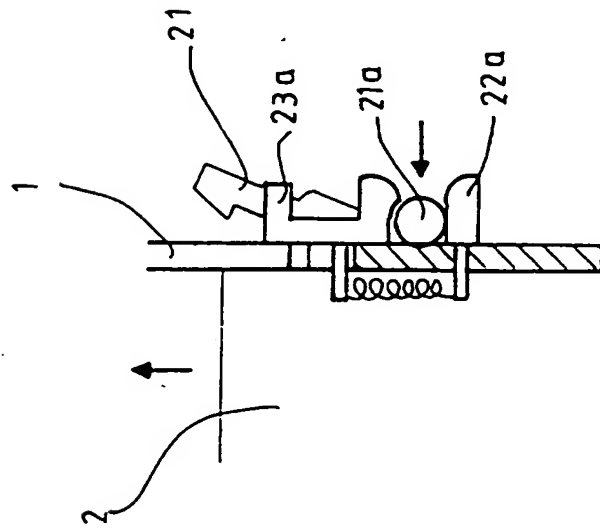


FIG. 11B

FILTER HOODBACKGROUND OF THE INVENTION

5 The present invention relates to filter hoods for drawing smoke, grease and odor laden air out of work area, and relates more particularly to such a filter hood which is easy to install and convenient to maintain.

10 Various filter hoods have been disclosed for drawing smoke, grease and odor laden air out of work area, and have appeared on the market. These filter hoods, as shown in Figure 1, are commonly comprised of a casing, a bottom cover covered on the casing and secured in place by rivets or welding, a wind box mounted inside the casing to hold two fans, and a grease filter mounted
15 inside the casing to filter grease from air. This structure of filter hood is not satisfactory in function. Because the casing and the bottom cover are fastened by rivets or welding, the assembly process is complicated. When installed, it is difficult to detach
20 the bottom cover and the wind box from the casing for a maintenance work. Because the casing, the bottom cover, and the wind box are fastened together by rivets, gaps tend to left between the parts of the filter hood, and smoke will escape from the filter hood without

passing through the exhaust ports on the casing. Furthermore, because the fans and the wind box are comprised of a big quantity of parts, the manufacturing cost of the filter hood is high.

5 SUMMARY OF THE INVENTION

 The present invention has been accomplished to provide a filter hood which eliminates the aforesaid drawbacks. It is therefore an object of the present invention to provide a filter hood which is simple in
10 structure and consists less number of parts. It is another object of the present invention to provide a filter hood which is easy to assemble. It is still another object of the present invention to provide a filter hood which is easy to maintain. It is still
15 another object of the present invention to provide a filter hood which is inexpensive to manufacture.

 According to one aspect of the present invention, the filter hood comprises a casing having a top exhaust port and two downward wind box mounting
20 flanges, a wind box mounted inside the casing and detachably fastened to the wind box mounting flanges by hook joints and hold two detachable fans, two grease filters respectively mounted on a respective suction

port on the wind box to filter grease from air air
passing through, and a bottom cover having a front side
hinged to the back side of casing and a front side
fastened to the front side of the casing by locks.

5 According to another aspect of the present invention,
the locks which fasten the front side of bottom cover to
the front side of the casing each comprises a first pair
of rails and a second pair of rails fixedly secured to
the bottom cover, a push rod moved between the first
10 pair of rails, a latch bolt moved between the second
pair of rails and forced into one retaining hole on the
casing, a spring having one end connected to a lug on
the push rod and an opposite end connected to the
periphery of the bottom cover, a connecting plate
15 transversely connected between the push rod and the
latch bolt, and an upright pin raised from the
connecting plate and connected to an outward flange on
the bottom cover, wherein the latch bolt is forced into
one retaining hole on the casing by the spring; the
20 latch bolt is released from the respective retaining
hole for permitting the bottom cover to be opened from
the casing when the push rod is pushed forwards.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an exploded view of a filter hood
25 according to the prior art;

Fig. 2 is a side view in section of a filter hood according to the present invention;

Fig. 3A is an exploded view of the filter hood shown in Figure 2;

5 Fig. 3B shows the inside structure of the casing for the filter hood shown in Figure 2;

Fig. 4 is a perspective view in an enlarged scale of the switch for the filter hood shown in Figure 2;

10 Fig. 5A is a side plain view of Figure 4 showing the lock locked;

Fig. 5B is similar to Figure 5A but showing the lock unlocked;

15 Fig. 6 is an enlarged view showing the structure of one hook and one pull bar at one side of the wind box according to the present invention;

Fig. 7 is a bottom view of the wind box according to the present invention;

20 Fig. 7A is an enlarged view taken on part A of Figure 7, showing the hook hooked in the respective hook hole;

Fig. 8 is similar to Figure 7 but showing the pull bars moved inwards;

25 Fig. 8A is an enlarged view taken on part A of Figure 8, showing the hook released from the

respective hook hole;

Fig. 9 is a sectional view showing a hinge fastened between the casing and the bottom cover by screw bolts according to the present invention;

5 Fig. 10 is a sectional view showing a fan installed in the shaft of one fan holder according to the present invention;

10 Fig. 11A shows an alternate form of the mounting structure on the wind box according to the present invention;

Fig. 11B is a schematic drawing showing the hooks of the of the mounting structure of the wind box of Figure 11A hooked on the casing; and

15 Fig. 11C is similar to Figure 11B but showing the hook disconnected from the casing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

20 Referring to Figures 2, 3A, and 3B, a filter hood in accordance with the present invention is generally comprised of a casing 1, a wind box 2 mounted inside the casing 1, a bottom cover 4 covered on the bottom side of the casing 1, and two grease filters 3 connected between the bottom cover 4 and the wind box 2.

The casing 1 comprises a plurality of retaining holes 11 on the inside wall thereof at the

front side, two symmetrical downward wind box mounting flanges 12 on the inside, each downward wind box mounting flange 12 having two hook holes 13 at two opposite ends, an exhaust port 14 at the center of the top, two fan holders 15 bilaterally disposed within the downward wind box mounting flange 12, and two downward shafts 16 respectively and downwardly extended from the fan holders 15, each downward shaft 16 having an outer thread 17 around the bottom end and a transverse pin hole 18 through the outer thread 17. The wind box 2 comprises two opposite pairs of hooks 21 respectively connected to two opposite sides thereof by a respective connecting plate 22, a plurality of springs 23 respectively connected between the hooks 21 and the downward wind box mounting flanges 12, two opposite pairs of axle housings 24 respectively and fixedly secured to the hooks 21, two curved pull bars 25 bilaterally connected between the hooks 21, each curved pull bar 25 having two opposite ends 26 connected between two axle housings 24, two top recesses 27, which receive the fan holders 15 respectively, and two axle holes 28 respectively made through the top recesses 27 for passing the shafts 16 (see also Figures 6 and 7). The bottom cover 4 comprises two locks 41 at the front side, and two outward flanges 418 respectively spaced

above the locks 41, each lock 41 comprised of a first pair of rails 412, a second pair of rails 412', a push rod 411 moved between the first pair of rail 412, a latch bolt 415 moved in and out of one retaining hole 11 on the casing 1 between the second pair of rail 412', a spring 414 having one end connected to a lug 413 on the push rod 411 and an opposite end connected to the bottom cover 4, a connecting plate 416 transversely connected between the push rod 411 and the latch bolt 415, an upright pin 417 raised from the connecting plate 416 and fastened to one outward flange 418 (see Figure 4). By pushing the push rod 411, the latch bolt 415 is forced out of the respective retaining hole 11, and therefore the bottom cover 4 can be opened from the casing 1 (see Figure 5). The bottom cover 4 has a back side hinged to the back side of the casing 1 by a hinge 5 and screw bolts 51 (see Figure 9).

Through the pull bars 25, the wind box 2 can be conveniently inserted into the casing 1 and fastened to the downward wind box mounting flanges 12 by hooking the hooks 21 in the hook holes 13 on the downward wind box mounting flanges 12. The hooks 21 have a respective sloping guide surface 211 (see Figures 6 and 7A). Through the sloping guide surface 211 on each hook 21, the hooks 21 can be conveniently moved into

engagement with the hook holes 13. When the wind box 2 is installed, the grease filters 3 are respectively fastened to two suction holes (not shown) on the bottom side of the wind box 2, and two fans 6 are respectively mounted around the fan holders 15 and the shafts 16 and secured to the shafts 16 by a respective transverse rod 61 and a respective screw cap 62 (see Figure 10). After the installation of the wind box 2 and the grease filters 3, the bottom cover 4 is covered on the casing 1. When the bottom cover 4 is covered on the casing 1, the latch bolts 415 are respectively forced into the retaining holes 11 on the casing 1 (see Figures 4 and 5), and therefore the bottom cover 4 is locked in the closed position.

When to maintain the filter hood, the push rods 411 of the locks 4 are depressed to release the latch bolts 415 from the retaining holes 11 (see Figure 5) for permitting the bottom cover 4 to be opened from the casing 1, then the screw caps 62 are respectively disconnected from the shafts 16 and the fans 6 are respectively moved out of the wind box 2, then the wind box 2 is removed from the casing 1 by pulling the pull bars 25 inwards to release the hooks 21 from the hook holes 13 (see Figures 8 and 8A). Furthermore, by

loosening the screw bolts 51 from the bottom cover 5, the bottom cover 5 can be disconnected from the casing 1 (see Figure 10).

5 Figures 11A, 11B, and 11C show an alternate
form of the mounting structure of the wind box 2. As
illustrated, the wind box 2 comprises two locating rods
21a at two opposite sides, two finger strips 23a at two
opposite sides, two opposite pairs of hooks 21
respectively fastened to the locating rods 21a, two
10 retainers 22a at two opposite sides for holding the
locating rods 21a. When the locating rods 21a are
respectively moved in between the finger strips 23a and
the retainers 22a, the hooks 21 are respectively
released from the casing 1 (see Figure 11B), and
15 therefore the wind box 2 can be removed from the casing
1. When the locating rods 21a are respectively moved
outwards from the retainers 22a, the hooks 21 are
forced into engagement with the downward wind box
mounting flanges 12, and therefore the wind box 2 is
20 fixed in position (see Figure 11C).

It is to be understood that the drawings are designed for purposes of illustration only, and are not intended as a definition of the limits and scope of the invention disclosed.

CLAIMS:

1. A filter hood comprising a casing having a top exhaust port, a wind box mounted inside said casing and having two suction ports disposed in communication with said top exhaust port, two grease filters respectively mounted on the suction ports on said wind box to filter grease from air passing through, and a bottom cover covered on said casing over said wind box, wherein said casing has a front side, a back side, at least one retaining hole at the front side, two symmetrical downward wind box mounting flanges bilaterally disposed on the inside for mounting said wind box, two fan holders spaced between said wind box mounting flanges and having a respective shaft, and two fans respectively mounted around said fan holders and retained to each shaft by a respective transverse rod, which is inserted through a pin hole on the respective shaft, and a screw cap, which is screwed up with the respective shaft, each wind box mounting flange having a plurality of hook holes; said bottom cover has a back side hinged to the back side of said casing by a hinge, a front side fastened to the at least one retaining hole on the front side of said casing by at least one lock; said wind box has a plurality of hooks releasably hooked in the hook holes on said wind box mounting flanges inside said casing.

2. The filter hood of claim 1 wherein said
at least one lock each comprises a first pair of rails
and a second pair of rails fixedly secured to said
bottom cover, a push rod moved between said first pair
5 of rails, a latch bolt moved between said second pair
of rails and forced into one retaining hole on said
casing, a spring having one end connected to a lug on
said push rod and an opposite end connected to the
periphery of said bottom cover, a connecting plate
10 transversely connected between said push rod and said
latch bolt, and an upright pin raised from said
connecting plate and connected to an outward flange on
said bottom cover, said latch bolt being forced into one
retaining hole on said casing by said spring, said latch
15 bolt being released from the respective retaining hole
when said push rod is pushed forwards.

3. The filter hood of claim 1 wherein said
wind box comprises two opposite pairs of hooks
respectively connected to two opposite sides thereof by
20 a respective connecting plate, a plurality of springs
respectively connected between said hooks and the
downward wind box mounting flanges of said casing, two
opposite pairs of axle housings respectively and fixedly

secured to said hooks, two curved pull bars bilaterally connected between said hooks, each curved pull bar having two opposite ends connected between two axle housings, two top recesses, which receive said fan holders respectively, and two axle holes respectively made through said top recesses for passing the shaft of each fan holder.

4. The filter hood of claim 1 wherein said hinge is detachably connected to said bottom cover by screw bolts.

5. The filter hood of claim 1 wherein said wind box comprises two locating rods at two opposite sides, two finger strips at two opposite sides, two opposite pairs of hooks respectively fastened to said locating rods, two retainers at two opposite sides for holding said locating rods, said hooks being respectively released from the hook holes on said wind box mounting flanges for permitting said wind box to be removed out of said casing when said locating rods are respectively moved in between said finger strips and said retainers, said hooks being respectively hooked in the hook holes on said wind box mounting flanges to hold said wind box inside said casing when said locating rods are respectively moved outwards from said retainers.

6. A filter hood comprising:

a casing having one or more exhaust ports and one or more inlet ports communicating via an air flow path with the one or more exhaust ports; and

5 one or more filter elements disposed within the casing in the air flow path between the one or more inlet ports and the one or more exhaust ports;

in which the casing has at least one hinged casing panel, whereby moving the hinged casing panel to an open
10 position allows access to the one or more filter elements.

7. A filter hood according to claim 6, in which the one or more filter elements are mounted on a wind box disposed within the casing.

15

8. A filter hood according to claim 6 or claim 7, comprising one or more fans for driving air through the filter hood along the air flow path.

20

9. A filter hood substantially as hereinbefore described with reference to Figures 2 to 11C of the accompanying drawings.



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Claims searched: All

Examiner: Mick Monk
Date of search: 16 October 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): BIT (TNFB, TNRU); F4V (VFC, VGAC);
F4X (XA2BX, XA2D); F4W

Int Cl (Ed.6): A47J (36/38); B01D (46/00, 46/10); B08B (15/02);
F24C (15/20); F24F (13/28)

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2274705 A (SUN-SING JANG) Bottom releasable tray (50, Fig. 4).	1,6
X	GB 2147990 A (THORN-EMI) Pivotable hood (5).	1,6
X	GB 1372170 (POWER-ELECTRIC) Tray (25, Fig. 2).	1,6
X	EP 0136738 A2 (BV HANDELSMAATSCHAPPIJ) Detachable lower plate (9).	1,6
A	US 5230327 (SUN-SING JANG)	1,6-8
X	US 4350504 (CENTURY 21 POLLUTION CONTROL) See eg para 6 column 5.	1,6
X	US 3660969 (FASCO INDUSTRIES) Removable filter unit (15).	1,6

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